

REMARKS

This application contains claims 1, 2, 5-9, 11-15, 18-22 and 24-45. Claims 1, 2, 5-9, 11-15, 18-22 and 24-26 have been canceled without prejudice. New claims 27-45 are hereby added. No new matter has been introduced. Reconsideration is respectfully requested.

Claims 1, 2, 5-9, 11-15, 18-22 and 24-26 were rejected under 35 U.S.C. 103(a) over Rekhter et al. (U.S. Patent 6,339,595) in view of Carroll et al. (U.S. Patent 6,304,575). Applicant has canceled the rejected claims and added new claims 27-45 in order to clarify the distinction of the present invention over the cited art.

Independent claim 27 recites a method for communication in a transparent LAN service (TLS), which acts as a virtual bridge between user equipment connected to its endpoints. In order to remove loops in the TLS topology, the label-switched routers (LSRs) transmit spanning tree protocol (STP) control frames via the tunnels. Each control frame comprises a control traffic label and a bridge protocol data unit (BPDU). The control traffic label indicates to the LSRs that the STP is to be executed by the LSRs without transmission of the BPDU to the user equipment. In this manner, the LSRs are able to remove loops in the topology of the TLS irrespective of the user equipment.

This claim is similar in substance to claims 1, 3 and 4 as originally filed, with the added limitation that the control frames (referred to as signaling frames in the original claims) are transmitted only among the LSRs in the TLS, and are not transmitted to the user equipment, and that loops are thus eliminated from the TLS independently of the user equipment. This added limitation is explained in the specification in paragraph 0029 of the published application. The relationship of the TLS to the user equipment that is connected to it is shown in Fig. 1 and is explained further in paragraphs 0021 and 0054. The TLS thus appears to the users as though it was a single (virtual) Layer 2 bridge, which is guaranteed to be internally loop-

free. Avoidance of loops in the user network, outside this virtual bridge, is the responsibility of the user.

Rekhter describes a Layer 3 virtual private network (VPN), which uses “PE routers” and “CE routers” in providing layer 3 service over a VPN (col. 4, lines 34-57). Rekhter’s network uses the standard layer 3 Border Gateway Protocol (BGP) to detect and reject routing loops (col. 24, lines 39-57, cited by the Examiner). In the present official action, the Examiner acknowledged that Rekhter fails to teach the use of a Layer 2 TLS or the Layer 2 spanning tree protocol (STP), as recited in claim 27. Note also that BGP messages are conventionally transmitted in a separate signaling plane, rather than via the label-switched paths used for transmitting the control frames in the method of claim 27.

Carroll describes an improved spanning tree protocol for use by token ring devices (abstract). Token Ring is a LAN standard, like Ethernet, which performs Layer 2 bridging functions (col. 1, lines 14-20 and 40-50). Carroll neither teaches nor suggests the extension of STP to operate in a TLS environment via label-switched tunnels. He makes no mention of the virtual bridge function of the TLS that is recited in claim 27.

Furthermore, the cited art neither teaches nor suggests the use of STP to remove loops from a TLS virtual bridge topology irrespective of user equipment that may be connected to the TLS, as required by claim 27. There is no suggestion in the prior art that the TLS and user domains should be separated for purposes of loop removal, as recited in this new claim. Therefore, claim 27 is believed to be patentable over the cited art.

New independent claims 36 and 45 respectively recite a communication device and a communication network operating on principles similar to the method of claim 27. Claims 36 and 45 are thus believed to be patentable for the reasons explained above with respect to claim 27.

New dependent claims 28-35 and 37-44 are based generally on the original dependent claims that were filed in this application. In view of the patentability of

Serial No. 10/057,332

Customer No. 07278

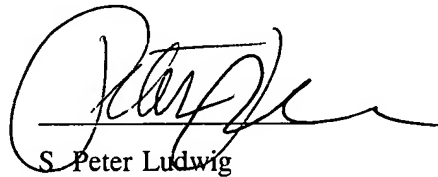
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independent claims 27 and 36, the new dependent claims are also believed to be patentable.

Applicant believes the amendments and remarks presented above to be fully responsive to all of the grounds of rejection raised by the Examiner. In view of these amendments and remarks, all of the claims now pending in this application are believed to be in condition for allowance. Prompt notice to this effect is requested.

Date: December 14, 2005

Respectfully submitted

A handwritten signature in black ink, appearing to read 'S. Peter Ludwig', is written over a horizontal line.

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